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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,494	09/08/2003	Kc Liu	TH3098	2027
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SHELL OIL COMPANY				
P O BOX 2463				
HOUSTON, TX 772522463				
EXAMINER				
JOHNSON, EDWARD M				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
06/03/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/658,494

**Applicant(s)**

LIU ET AL.

**Examiner**

Edward M. Johnson

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 March 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 8, 9 and 11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1, 8, 9 and 11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 8-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maunula US 2002/0054843 in view of Buchanan et al. US 5,591,417.

Regarding claim 1, Maunula '843 discloses a method for purifying exhaust comprising contacting the exhaust with a unified NO<sub>x</sub> adsorbent catalyst and particle separator system (see 0012), wherein the system comprises a ceramic having a honeycomb structure (see 0047) having outlet and inlet channels (see figures), and regenerating the system (see 0048 and Example 1).

Maunula fails to disclose regeneration with syngas and internal combustion engines.

Buchanan '417 discloses regeneration with syngas (see column 7, lines 1-11 and column 2, lines 43-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to simultaneously use the syngas regeneration of Buchanan in the exhaust purifying method of Maunula because there would obviously, to one of ordinary skill, be at least some exhaust gas leftover at the beginning of "periodic" regeneration, and because Buchanan discloses the syngas regeneration for use in a process for removing NO<sub>x</sub> (title), which permits a reduction in combustion air and temperature, and improves fuel efficiency and NO<sub>x</sub> reduction (see column 3, lines 15-21). Furthermore, "industrial plants" are disclosed and internal combustion engines are used in industrial plants.

Regarding claims 8-9, Maunula discloses Ba, platinum, and examples of nitrates, sulfates, which would at least suggest carbonates (0023 and 0024).

Regarding claim 11, Maunula discloses the system comprises a ceramic having a honeycomb structure (see 0047) and providing the regeneration gas to the third of three beds, which would at least suggest 33% (column 5, lines 43-55).

***Response to Arguments***

3. Applicant's arguments filed 3/7/08 have been fully considered but they are not persuasive.

It is argued that in the Office Action, Claim 1... (hereinafter "Buchanan"). This is not persuasive because Buchanan discloses regeneration with syngas (see column 2, lines 43-48).

It is argued that further, Maunula does not teach or suggest... being catalytically burned. This is not persuasive because Maunula discloses contacting the exhaust with a unified NO<sub>x</sub> adsorbent catalyst and particle separator system (see 0012), wherein the system comprises a ceramic having a honeycomb structure (see 0047) having outlet and inlet channels (see figures), and regenerating the system (see 0048 and Example 1); and there would obviously, to one of ordinary skill, be at least some exhaust gas leftover at the beginning of "periodic" regeneration.

It is argued that regarding the regeneration of the NO<sub>x</sub> adsorber... page 2-3, paragraph 27. This is not persuasive for the reasons above.

#### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Edward M. Johnson/  
Primary Examiner  
Art Unit 1793

EMJ